



Integrated Strategies for 21st Century Aeronautics



**FAA Center of Excellence Conference
Embry Riddle Aeronautical University**

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NASA Langley
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Main Points

- A strategy for innovation in air transportation systems
- Emerging Technology Directions
- FAA-NASA Collaboration

*It is extremely unlikely
that the world will ever take such a step forward
in every means of locomotion as has been taken ...
between the year 1830 and the present date."*

— The Rudder magazine, October 1899



A Strategy for Innovation in Air Transportation Systems



Airspace Systems

**Airspace
Capability**



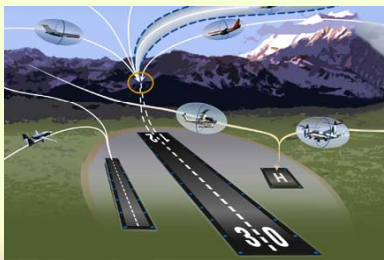
**Future
State**

Cost

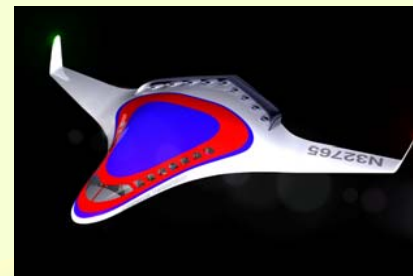
Environment

Safety/Security

**Vehicle
Capability**



Aviation Safety & Security



Vehicle Systems



Emerging Technology Directions -- Vehicle Sectors Drive Aircraft Technologies



- Supersonic Aircraft: Breaking the sound barrier for the U.S. public



- Subsonic Transport: Clean, quiet and affordable air transportation for the U.S. public



- Runway Independent Aircraft: Viable vertical takeoff and landing air transportation for the U.S. public



- Personal Air Vehicles: Affordable, easy-to-use personal air transportation for the U.S. public



- Unmanned Air Vehicles: Safe, affordable flight operations in hazardous airspace for the U.S. public good



Emerging Technology Directions -- Airspace Systems Program



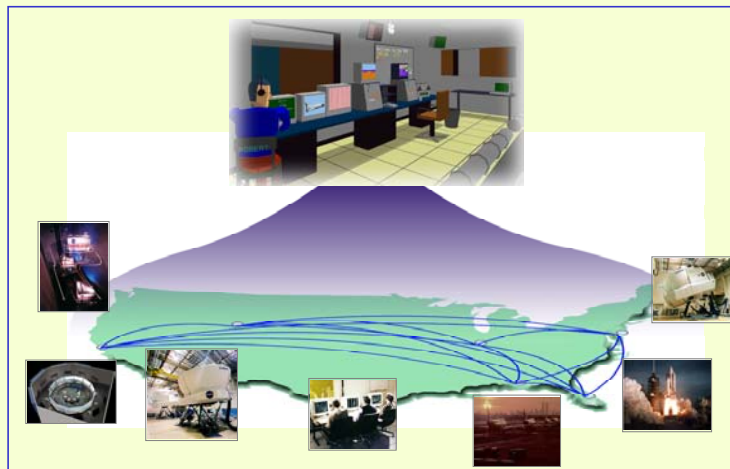
***Advanced Communications,
Navigation & Surveillance***



Wake Vortex Solutions



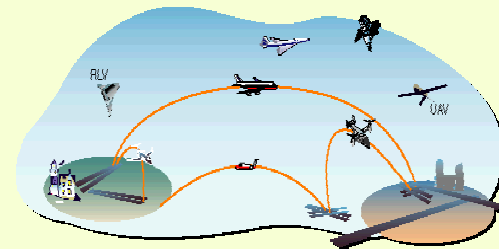
Airborne Separation



ATM Automation Technologies



***Controller Decision
Support Tools***



***Virtual Airspace Modeling
& Simulation***



Aviation Human Systems



***Small Aircraft
Transportation Systems***



Emerging Technology Directions -- Aviation Safety and Security Program

Vehicle Safety Technologies



**Synthetic Vision
Systems**

**Single Aircraft
Accident
Prevention**

**Accident
Mitigation**

Weather Safety Technologies



**Weather Accident
Prevention**

Icing Research

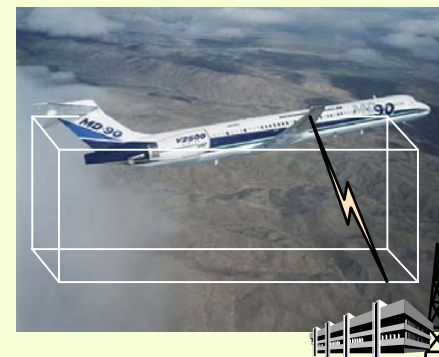
System Safety Technologies



**Aviation System
Monitoring &
Modeling**

**System-Wide
Accident Prevention**

Aviation Security (FY 2004 Start)



**Aircraft & Systems
Hardening**

**Airspace
Operation
Systems**

**Aviation
Information
Screening**

Sensors



Summary

- **Strategies that integrate vehicle, airspace and safety systems technologies create opportunities for innovation**
- **The emergence of new technologies opens up the design concept space for air mobility**
- **Success in air transportation system innovation requires success in NASA-FAA collaboration**

